

**WHAT IS CLAIMED IS:**

1. A method for plating a metal film onto a surface of a seed layer of a substrate, and for etching the metal film, comprising:

in a plating section, plating a metal film onto a surface of a seed layer of a substrate;

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in a cleaning section, ejecting an etching solution only onto a peripheral portion of said metal film for removing said peripheral portion of said metal film and a peripheral portion of said seed layer while holding and rotating said substrate with said metal film plated thereon facing upwardly.

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2. The method according to claim 1, further comprising:

ejecting a cleaning solution onto a backside surface of said substrate for removing metal adhered to said backside surface.

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3. The method according to claim 1, further comprising:

supplying a cleaning solution onto a central portion of said metal film, wherein said cleaning solution is for removing metal and particulate contaminants from said metal film and is not for etching said metal film.

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4. The method according to claim 3, wherein ejecting an etching solution onto a peripheral portion of said metal film comprises ejecting said etching solution onto said peripheral portion of said metal film while supplying said cleaning solution onto said central portion of said metal film.

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5. The method according to claim 2, wherein ejecting said cleaning solution onto said backside surface of said substrate is for removing from said backside surface in its entirety metal adhered to said backside surface.

6. The method according to claim 1, wherein plating a metal film onto a surface of a seed layer of a substrate comprises using a plating device including a plating vessel to plate said metal film onto said surface of said seed layer of said substrate.
- 5        7. The method according to claim 1, wherein ejecting an etching solution onto a peripheral portion of said metal film comprises using at least one first nozzle to eject said etching solution onto said peripheral portion of said metal film while said at least one first nozzle is inclined relative to a surface of said metal film.
- 10      8. The method according to claim 1, wherein ejecting an etching solution onto a peripheral portion of said metal film comprises using at least one first nozzle to eject said etching solution onto said peripheral portion of said metal film while said at least one first nozzle is inclined relative to a surface of said metal film and spaced a given distance from an edge of said substrate.
- 15      9. The method according to claim 1, wherein ejecting an etching solution onto a peripheral portion of said metal film comprises ejecting one of sodium persulfate, sulfuric acid, hydrochloric acid, ionized water, ozonized water, diluted hydrofluoric acid, and a mixture of sulfuric acid and hydrogen peroxide onto said peripheral portion of said metal film.
- 20      10. The method according to claim 1, wherein ejecting an etching solution onto a peripheral portion of said metal film comprises ejecting said etching solution onto a peripheral portion of one of a gold film, silver film, copper film and solder film.
- 25      11. The method according to claim 1, further comprising:

washing said substrate with said metal film plated thereon before ejecting said etching solution onto said peripheral portion of said metal film.

12. The method according to claim 1, further comprising:

5 rinsing and drying said substrate after ejecting said etching solution onto said peripheral portion of said metal film.

13. The method according to claim 1, further comprising:

transporting said substrate with said metal film plated thereon from said plating  
10 section to said cleaning solution.